Remarks

Claims 1-20 are pending in the Application.

Claim 1 is amended herein.

Claims 16-20 are cancelled herein.

Claims 21-30 are added herein.

I. REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Examiner has rejected Claim 18 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Examiner contends that "Claim 18 recites the limitation 'the taggants' in line 1," and that "[t]here is insufficient antecedent basis for this limitation in the claim."

Claims 16-20 are hereby cancelled, thereby rendering the rejection moot.

II. REJECTIONS UNDER 35 U.S.C. § 102 OVER *WEISS*

Examiner has rejected Claims 1-5, 8, 10, 11, 14, 16, 19, and 20 under 35 U.S.C. § 102(b) as being anticipated by Weiss et al., U.S. Patent No. 5,990,497 ("*Weiss*").

As noted above, Claims 16, 19, and 20 have been cancelled.

Claim 1 has been amended to read:

> A process comprising:
>
> a) exposing a chemical species to nanoparticles such that said chemical species adsorbs onto a surface of the nanoparticles as a chemical adsorbate;
>
> b) irradiating the nanoparticles comprising the chemical adsorbate with radiation;
>
> c) detecting altered photoluminescence properties of the nanoparticles comprising the chemical adsorbate as a result of the chemical species being adsorbed onto the surface of the nanoparticles; and
>
> d) analyzing the altered photoluminescence properties by comparing to one or more pre-defined altered photoluminescence properties, to provide for an identifying of the chemical species.

The above amending serves to clarify that the altered photoluminescence is a result of the chemical species being adsorbed onto the surface of the nanoparticles. No new matter is introduced as a result of such amending of Claim 1.

Weiss teaches a luminescent semiconductor nanocrystal compound comprising: (1) a semiconductor nanocrystal, and (2) a linking agent having a first portion linked to the semiconductor nanocrystal, and a second portion capable of linking to an affinity molecule. Together with the affinity molecule, the luminescent semiconductor compound forms a organo luminescent semiconductor nanocrystal probe capable of bonding to a detectable substance in a material. *Weiss*, col. 2, *ll.* 18-42. This is no different than fluorescent dye labels, except that it has the advantage of being able to label a material with a single type of probe for both electron microscopy and fluorescence. *Weiss*, col. 1, *l.* 23-col. 2, *l.* 2. Furthermore, there is no bonding/binding between the nanocrystal and the detectable substance, it is all done through linker species and affinity molecules.

Weiss does not teach a process for detecting chemical species (i.e., analytes) based on their adsorption on a nanoparticle and detecting the altered photoluminescence properties of the nanoparticle as a result of such adsorption of the chemical species—as required by Claim 1. Accordingly, Claim 1, and all claims depending directly or indirectly therefrom, are not anticipated by *Weiss*.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 1-5, 8, 10, 11, and 14 under 35 U.S.C. § 102(b) as being anticipated by *Weiss*.

III. REJECTIONS UNDER 35 U.S.C. § 102 OVER *DANIELS*

Examiner has rejected Claims 1-3, 5, 8, 12, 15, 16, 19, and 20 under 35 U.S.C. § 102(b) as being anticipated by Daniels et al., U.S. Patent Application Publication No. 20020004246 ("*Daniels*").

Claims 16, 19, and 20 have been cancelled.

Daniels teaches an immunochromatographic test strip assay which utilizes quantum dots as detectable labels. Like *Weiss* above, *Daniels* requires a targeting compound bound to the

nanocrystals, wherein the targeting compound "has affinity for one or more selected biological or chemical targets." *Daniels*, para. 16. Thus, the analyte is not in direct contact with the nanocrystals, and no change in the luminescent properties of the nanocrystal are monitored—as required by Claim 1 of the present Application. Accordingly, Claim 1, and all claims depending directly or indirectly therefrom, are not anticipated by *Daniels*.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 1-3, 5, 8, 12, and 15 under 35 U.S.C. § 102(b) as being anticipated by *Daniels*.

IV. REJECTIONS UNDER 35 U.S.C. § 102 OVER *CHEE*

Examiner has rejected Claims 1-6, 8, 10, 11, 14, 16, 17, 19, and 20 under 35 U.S.C. § 102(b) as being anticipated by Chee et al., U.S. Patent No. 6,544,732 ("*Chee*").

Claims 16, 17, 19, and 20 have been cancelled.

Chee teaches a biological assay comprising beads or microspheres to which chemical functionality (i.e., bioactive agents) is imparted. Nanocrystals can be incorporated into the beads in lieu of fluorescent dyes so as to provide for a unique optical signature for that particular bead. *Chee*, col. 3, *ll.* 41-56. As in the case of *Weiss* and *Daniels*, *Chee* utilizes nanocrystals merely as fluorescent labels. Such nanocrystals do not interact directly with the biological molecules being assayed—as required by Claim 1 of the present Application. Accordingly, Claim 1, and all claims depending directly or indirectly therefrom, are not anticipated by *Chee*.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 1-6, 8, 10, 11, and 14 under 35 U.S.C. § 102(b) as being anticipated by *Chee*.

V. REJECTIONS UNDER 35 U.S.C. § 102 OVER *BARBERA-GUILLEM*

Examiner has rejected Claims 1-6, 8, 10, 11, 14, 16, 17, 19, and 20 under 35 U.S.C. § 102(b) as being anticipated by Barbera-Guillem et al., U.S. Patent No. 6,261,779 ("*Barbera-Guillem*").

Claims 16, 17, 19, and 20 have been cancelled.

Barbera-Guillem teaches an amplifiable nonisotopic detection system for biological molecules that comprises "nanocrystals that are functionalized to be water-soluble, and further functionalized to comprise a plurality of polynucleotide strands of known sequence which extend outwardly from each nanocrystal." *Barbera-Guillem* , col. 2, *ll.* 13-19. As in the cases of *Weiss*, *Daniels* and *Chee* above, *Barbera-Guillem* utilizes nanocrystals as fluorescent labels. Such nanocrystals do not interact directly with the biological molecules being assayed—as required by Claim 1 of the present Application. Accordingly, Claim 1, and all claims depending directly or indirectly therefrom, are not anticipated by *Barbera-Guillem.*

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 1-6, 8, 10, 11, and 14 under 35 U.S.C. § 102(b) as being anticipated by *Barbera-Guillem.*

VI. REJECTIONS UNDER 35 U.S.C. § 103 OVER *WEISS* AND *DANIELS* IN VIEW OF *CHEE* AND *BARBERA-GUILLEM*

Examiner has rejected Claims 6 and 17 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss* and *Daniels* in view of *Chee* and *Barbera-Guillem.*

Claim 17 has been cancelled.

Claim 6 merely introduces an additional limitation, in terms of the kinds of chemical species being investigated, to Claim 1. Since Claim 6 depends directly from Claim 1, as Claim 1 is neither anticipated by, nor obvious in view of any combination of *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem* (see above), neither is Claim 6 anticipated by, nor obvious in view of any combination of *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem.*

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claim 6 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss* and *Daniels* in view of *Chee* and *Barbera-Guillem.*

VII. REJECTIONS UNDER 35 U.S.C. § 103 OVER *WEISS, DANIELS, CHEE* AND *BARBERA-GUILLEM* IN VIEW OF *HARRIS*

Examiner has rejected Claim 7 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss* and *Daniels* and *Chee* and *Barbera-Guillem* in view of Harris et al, U.S. Patent Application Publication No. 20040009911 ("*Harris*").

Of paragraphs 8, 16, 156, and 161 in *Harris* to which Examiner points, only paragraphs 16 and 161 appear to discuss quantum dots. Furthermore, Applicant is unclear as to which processes of *Harris* are deemed reversible by the Examiner. Regardless, as Claim 1 (from which Claim 7 directly depends) is neither anticipated by, nor obvious in view of, any combination of *Weiss*, *Daniels*, *Chee*, *Barbera-Guillem*, and *Harris*, neither is Claim 7 anticipated by, nor obvious in view of, any combination of *Weiss*, *Daniels*, *Chee*, *Barbera-Guillem* and *Harris*.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claim 7 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss* and *Daniels* and *Chee* and *Barbera-Guillem* in view of *Harris*.

VIII. REJECTIONS UNDER 35 U.S.C. § 103 OVER *WEISS, DANIELS, CHEE* AND *BARBERA-GUILLEM* IN VIEW OF *WEST*

Examiner has rejected Claim 9 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss* and *Daniels* and *Chee* and *Barbera-Guillem* in view of West et al, U.S. Patent No. 6,530,944 ("*West*").

The passage in *West* to which Examiner points (*West*, col. 16, *ll.* 5-8) regards delivery of nanoparticles to a human patient as a diagnostic tool (i.e., imaging agent), or as part of a therapeutic treatment, wherein such delivery is provided by a *nasal spray*. Considering the dissimilar nature of the arts involved, it would not have been obvious to combine the teachings of *West* with *Weiss* and *Daniels* and *Chee* and *Barbera-Guillem*. Regardless, as Claim 1 (from which Claim 9 directly depends) is neither anticipated by, nor obvious in view of any combination of *Weiss*, *Daniels*, *Chee*, *Barbera-Guillem* and *West*, neither is Claim 9 anticipated by, nor obvious in view of any combination of *Weiss*, *Daniels*, *Chee*, *Barbera-Guillem* and *West*.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claim 9 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss* and *Daniels* and *Chee* and *Barbera-Guillem* in view of *West*.

IX. REJECTIONS UNDER 35 U.S.C. § 103 OVER *WEISS, CHEE* AND *BARBERA-GUILLEM* IN VIEW OF *DANIELS*

Examiner has rejected Claims 12, 13, and 15 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss*, *Chee* and *Barbera-Guillem* in view of *Daniels*.

As mentioned above, none of *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem*, either alone or in combination, provide for or suggest the process of Claim 1. As Claims 12, 13, and 15 all depend directly from Claim 1, for the same reasons, they too are not anticipated by, or obvious in view of, any combination of *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem*.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 12, 13, and 15 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss*, *Chee* and *Barbera-Guillem* in view of *Daniels*.

X. REJECTIONS UNDER 35 U.S.C. § 103 OVER *WEISS, DANIELS, CHEE* AND *BARBERA-GUILLEM* IN VIEW OF *RAVKIN*

Examiner has rejected Claim 13 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem* in view of Ravkin et al., U.S. Patent No. 6,908,737 ("*Ravkin*").

Like, *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem*, *Ravkin* teaches the use of nanocrystals as fluorescent labels, wherein such fluorescent labels are disposed on or otherwise associated with coded carriers used in the detection and quantification of generally biological analytes, wherein the carriers generally comprise biological probe molecules. *See Ravkin*, Abstract and col. 14, *ll.* 38-60. None of *Weiss*, *Daniels*, *Chee*, *Barbera-Guillem*, and *Ravkin* teach or suggest a process of detecting chemical species by their direct adsorption onto a nanoparticle surface and subsequently evaluating the altered photoluminescence of the nanoparticle as a result of such adsorption—as required by Claim 1. As Claim 13 depends directly from Claim 1, it is not anticipated by, or obvious in view of, any combination of *Weiss*, *Daniels*, *Chee*, *Barbera-*

Guillem and *Ravkin* for the same reasons Claim 1 is not anticipated by, or obvious in view of, any combination of *Weiss*, *Daniels*, *Chee*, *Barbera-Guillem*, *Ravkin*.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claim 13 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem* in view of *Ravkin*.

XI. REJECTIONS UNDER 35 U.S.C. § 103 OVER *WEISS, DANIELS, CHEE* AND *BARBERA-GUILLEM* IN VIEW OF *MCGREW*

Examiner has rejected Claim 18 under 35 U.S.C. § 103(a) as being unpatentable over *Weiss*, *Daniels*, *Chee* and *Barbera-Guillem* in view of McGrew et al., U.S. Patent No. 6,692,031 ("*McGrew*").

Claim 18 has been cancelled.

XII. ADDED CLAIMS

Claims 21-30 have been added herein. No new matter is introduced as a result of adding these claims.

XIII. CONCLUSION

As a result of the foregoing, it is asserted by Applicant that the Claims in the Application are presently in a condition for allowance, and respectfully request an allowance of such Claims. Applicants respectfully request that the Examiner call Applicants' attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining problems.

Respectfully submitted,

WINSTEAD SECHREST & MINICK P.C.
Attorneys for Applicant

By:_____
Ross Spencer Garsson
Reg. No. 38,150

Kelly K. Kordzik
Reg. No. 36,571

P.O. Box 50784
Dallas, Texas 75201
Phone: (512) 370-2851

Houston_1 808199v.1